

## A Review on Conceptualization and Dimensions of Safety Culture

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### ABSTARCT

Recent development in industrialization and global economy has contributed to the increased number of workplace injuries and accidents. Safety culture has been seen as a central medium to curb the worrying trend of workplace accidents. The term of safety culture has emerged from the Chernobyl nuclear disaster in 1986 and the concept has been widely used until today. However, the conceptualization of safety culture suffers from several major drawbacks such as no definite understanding of how safety culture being defined and measured. This paper hypothesized that higher levels of safety culture in the workplace will display lower numbers of accidents. Due to this concern, this paper seeks to provide a clear conceptualization of safety culture, dimensions used to measure it and common research methodology used in the previous safety research.

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**KEYWORDS:** *Safety Culture, Workplace Accidents, Safety*

### 1. Introduction

Safety culture is a term that first appears after the Chernobyl nuclear disaster in 1986 (Cox and Flin, 1998, Cooper, 2002, Garc á-Herrero *et al.*, 2013). The importance of safety culture as well as the impact of the managerial and human factors on accidents was highlighted in the report of Chernobyl disaster, rather than merely technical failures (Flin *et al.*, 2000). Thus, numerous studies have attempted to investigate and define the term “safety culture”; trying to discuss its dimensions as well as the method to analyze since it has been widely recognized from 1986 (Pidgeon, 1998; Carroll, 1998; Clarke, 1998; Cooper, 2002; Cai, 2005; Bentley and Tappin, 2010; Edwards *et al.*, 2013). This paper will proceed by reviewing the literature in aspect of safety culture, look into its definitions and dimensions; discuss about the methodology adopted by existing studies and lastly discuss the impact of safety culture on reducing the number of accidents in the organization.

Nowadays, safety culture has being recognized and become prevalent as the key aspect which closely linked to safety management in many industries (Håvold, 2010; Mearns *et al.*, 2013). To lower the number of safety failure, Edwards and Jabs (2009) believed that the employees should create safety culture by speaking out their concerns and challenge

authorities in the organization. However, it cannot be assumed that proactive communication about safety issues can always exist within the organization (Ismail *et al.*, 2012a).

## 2. Definitions, Dimensions and Method to Measure Safety Culture

Except of Chernobyl nuclear reactor accident, a series of major disaster such as King Cross fire, Piper Alpha explosion, Clapham junction train crash were due to the lack of safety culture in the organization (Gadd and Collins, 2002). Unfortunately, the scarcity of safety culture has led to 235 men killed in these accidents.

There is a large volume of published studies describing the concept of safety culture (Teo and Feng, 2009; Filho *et al.*, 2010; Wu *et al.*, 2010; Mariscal *et al.*, 2012; Edwards *et al.*, 2013; Fang and Wu, 2013; Pumar-Méndez *et al.*, 2014; Atchley *et al.*, 2014). However, the concept of safety culture is still remaining vague and implicit yet it does not have a universal definition for it (Frazier *et al.*, 2013; Boughaba *et al.*, 2014; Reiman *et al.*, 2014). In other word, there is no mutual way to define and measure safety culture (Guldenmund, 2000; Hale, 2000; Garc á-Herrero *et al.*, 2013).

Meanwhile, the concept of safety culture and safety climate has discovered having a considerable overlap in terms of definition (Fruhen *et al.*, 2013). Guldenmund (2000) has reviewed existing studies and listed out 18 different definitions of safety culture as well as for safety climate which he claimed that both concepts have not much consensus in term of cause, content and consequences (Håvold, 2010). Table 1.1 has listed down seven definitions of safety culture that proposed by different researchers from 1991 until 2014.

**Table 1.1:** Definition of safety culture in previous study

References	Definition
Cox & Cox (1991)	Attitudes, beliefs, perceptions and values that employees share in relation to safety, has gain acceptance due to its critical role for accident prevention.
Cox & Flin (1998)	System which indicates to the workforce what is important and legitimate for their action in relation to safety culture.
Wu <i>et al.</i> (2010)	Employees' imaging of safety conditions in the workplace; which images then affect organizational safety activities.
Mannan <i>et al.</i> (2013)	Organization shared attitudes, values, norms and beliefs about safety, including attitudes about danger, risks, and the proper conduct of hazardous operation.
Frazier <i>et al.</i> (2013)	The values, attitudes, beliefs, risk-perceptions and behaviours as they relate to employee safety.
dos Santos Grecco <i>et al.</i> (2014)	Personal attitudes and habits of thought and to the style of organization

Morrow <i>et al.</i> (2014)	Employees' beliefs about the importance of safety are shaped by the safety culture of the organization, which then influences their attitudes toward safety, perceived norms over safe working behaviours for working safely, and perceptions of control over safe working behaviour.
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The multifaceted nature of safety culture brings the lack of consent about how it is define and to measure (Mearns *et al.*, 2013). In order to conceptualize the term of safety culture, many researchers had proposed different kind of attributes and measuring method of safety culture in their studies. Wu *et al.* (2010) believed that safety culture consists of three dimensions which are employee safety participation, perceived risk and emergency response. However, Mannan *et al.* (2013) conducted a case study on creating a Best-in-Class safety culture framework, from there they indentified four attributes of safety culture in their study; there are leadership, culture and value, goals, policies and initiatives, and organization and structure.

In the research done by Garc á-Herrero *et al.* (2013) and Frazier *et al.* (2013) both using quantitative analysis had addressed their own dimensions of safety culture. Garc á-Herrero *et al.* (2013) had proposed five attributes of safety culture in their research which are safety is a clearly recognized value, accountability for safety is clear, safety is integrated into all the activities in the organization, leadership for safety is clear, and safety is learning driven. Meanwhile, Frazier *et al.* (2013) had identified three dimensions of safety culture which include in their 92-items questionnaire; management concern, personal responsibility, and peer support for safety.

In recent year, the argument on the development of safety culture's dimension is still carrying on. Dos Santos Grecco *et al.* (2014) in their exploratory case study has proposed that safety culture consists of six dimensions that include top-level commitment to safety, organizational learning, organizational flexibility, awareness, just culture, and emergency preparedness. Meanwhile, Morrow *et al.* (2014) believed that, management, commitment to safety, willingness to raise safety concern, decision making, supervisor's responsibility for safety, questioning attitude, safety communication, personal responsibility for safety, prioritizing safety, and safety training, total ten should be the dimensions of safety culture.

### 3. Conclusion

According to Ismail *et al.* (2012b), organization with positive safety culture becomes a reflective on safety practices by bringing the workforce together to learn how to work more safely at the workplace. In short, fostering a positive safety culture has become a strong and critical fundamental of improving safety performance within the organization (Fang and Wu, 2013). This paper hypothesized that higher levels of safety culture in the workplace will display lower numbers of accidents rate at the workplace.



**Figure 1.1:** Safety culture framework

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